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# Preliminary Science Flight Report

## Operation IceBridge Antarctica 2011



**Flight:** GV-FL04  
**Mission:** LVIS-Evans

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### Flight Report Summary

<b>Aircraft</b>	NSF G-V (N677F)
<b>Flight Number</b>	4
<b>Flight Request</b>	118003
<b>Date</b>	Wednesday October 12 <sup>th</sup> , 2011, DOY 285
<b>Purpose of Flight</b>	Operation IceBridge Mission, LVIS Evans
<b>Take off time</b>	8:42 local time from Punta Arenas (SCCI)
<b>Landing time</b>	18:40 local time at Punta Arenas (SCCI) on October 12, 2011
<b>Flight Hours</b>	10
<b>Aircraft Status</b>	Airworthy.
<b>Sensor Status</b>	All installed sensors operational.
<b>Significant Issues</b>	None
<b>Accomplishments</b>	<ul style="list-style-type: none"><li>• High-altitude survey (~41,000 ft pressure altitude) of grid lines</li><li>• Completed mission as planned.</li><li>• Conducted roll and pitch maneuvers for calibration at start/end of flight</li></ul>
<b>Geographic Keywords</b>	Antarctica, Evans Ice Stream, Drewry Ice Stream, Filchner Ronne Ice Shelf, West Antarctic Ice Sheet, WAIS
<b>ICESat/CryoSat Track</b>	Icesat Track 0267, Grid lines cross numerous Icesat tracks
<b>Repeat Mission</b>	Overlap with previous IceBridge data at Evans Ice Stream

## Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
LVIS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50 GB	None
POS/AV (510 + 610)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5 GB	None
LVIScameras(2)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	25 GB	None
G-V Onboard Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	40 MB	None

### Mission Report (Michelle Hofton, Mission Scientist, Instrument Operators: David Rabine, Shane Wake)

The fourth LVIS NSF G-V flight surveyed a series of lines centered at the Evans Ice Stream and a portion of IceSat Track 0267. Five, ~350km long grid lines, spaced ~20km apart extending from the grounding line inland were surveyed. All planned lines were surveyed, a total of ~1750 lineal km, ~3500 km<sup>2</sup> mapped. The survey is part of the overall deployment plan to collect grid data over a large region that encompasses the entire Antarctic Peninsula to the Getz Coast.

Weather models and the airport weather office predicted a cloud break in the Evans area with conditions improving throughout the day. The flight was planned to take advantage of this with mapping starting at the coast, working inland as the flight progressed, and with final line selection to be made in the air based on conditions in the area. Both transits to and from the survey area were partially cloudy, but land ice data were collected south of the George VI ice shelf to/from the survey area. Weather over the survey area was clear except for a portion over the higher elevations of the Evans and Drewry ice streams. To maximize data coverage, we substituted a coastal line for the inland line after seeing the cloud cover conditions inflight. A small portion of the inland (5<sup>th</sup>, last) line was lost to clouds (about 50km over Drewry Ice stream). The other 4 lines and the crossing ICESat track had close to 100% coverage.

The LVIS sensor worked very well. Data was successfully collected over ~97% of the survey lines and on portions of the transit over land to and from the target area. The cameras were operated over the survey area and over other cloud-free areas.

A ramp pass was flown upon return to Punta Arenas at 10,000 ft for calibration of the LVIS absolute elevations. Roll and pitch maneuvers were carried out on the transit to/from Antarctica.

### Individual instrument reports from experimenters on board the aircraft:

**LVIS:** The LVIS system worked well.

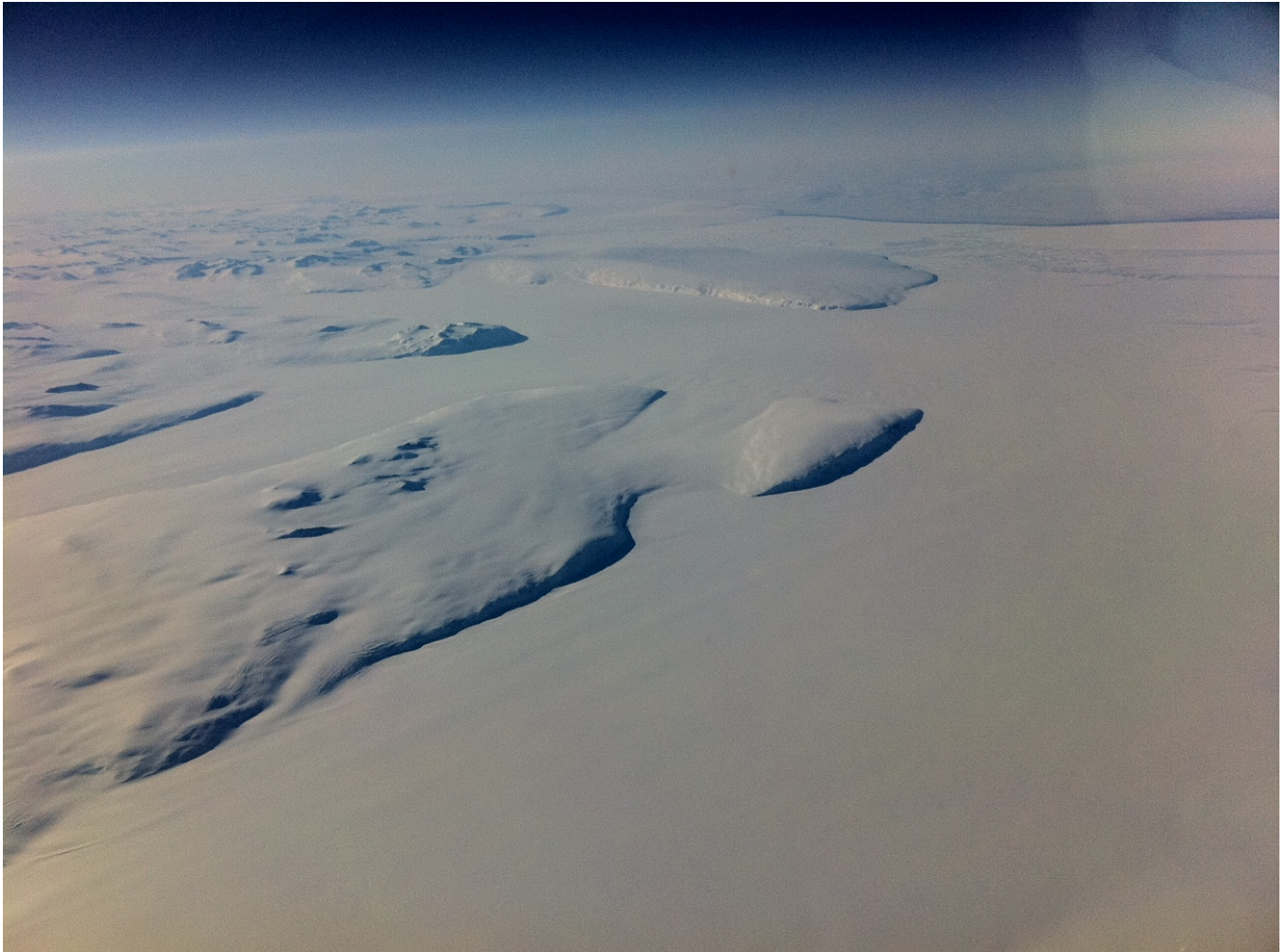
**POS/AV:** Systems worked well. No issues.

**LVIScam:** System worked well. No issues.

**G-V on board data:** System worked well.

The Gardner inlet to the Filchner-Ronne Ice shelf appears as a surreal landscape from 41,000' in the NCAR/NSF G-V (Gulfstream 5) aircraft.

(Photo credit: Michelle Hofton)



This map illustrates the Antarctic Peninsula and its surrounding waters, highlighting various ice shelves, ice streams, and geographical features. The map includes a coordinate grid with longitude (70° W to 55° W) and latitude (78° S to 78° S) markers. A scale bar at the bottom indicates distances from 0 to 500 Kilometers.

**Geographical Features and Ice Shelves:**

- Ice Shelves:** Wilkins Ice Shelf, Abbott Ice Shelf, Rignall Ice Shelf, and others.
- Ice Streams:** Greyny Ice Stream, Evans Ice Stream, Alison Ice Stream, and others.
- Inlets:** Healy Inlet, Schuchert Inlet, Kyrwan Inlet, and others.
- Glaciers:** Stobellus Glacier, George F. Rignall Glacier, and others.

**Tracks:**

- Red Tracks:** Track 367, Track 10, Track 263, Track 1320, Track 234, Track 264, Track 71, Track 1336.
- Yellow Tracks:** Various tracks shown in yellow, including a prominent looped track in the central region.

**Other Labels:** Powell Ice Rise, Carlson Inlet, Spence Inlet, Rufford Ice Stream, and others.

### Flight Hours Summary

<b>Flight</b>	<b>Date</b>	<b>Aircraft Flight #</b>	<b>Data Flight#</b>	<b>Duration (hr)</b>	<b>Running Total(hr)</b>	<b>Remaining Science Hours*</b>
						100.00
PUQ-PUQ	10/07/11		GV-FL01	10.7	10.7	89.3
PUQ-PUQ	10/08/11		GV-FL02	10.4	21.1	78.9
PUQ-PUQ	10/10/11		GV-FL03	10.5	31.6	68.4
PUQ-PUQ	10/12/11		GV-FL04	10.0	41.6	58.4

\* Extended mission science hours are available